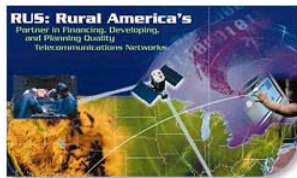


## **Rural Telephone Bank: Privatization Project Market Assessment: CAPEX Needs of Rural Carriers**



October 17, 2002

### **Market Assessment Contents**

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- Status of Rural Telecommunications Carriers
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## Project Objectives and Key Activities

**Assess the market trends in the rural telecommunications segment and estimate the market demand for capital expenses of rural telecommunications carriers.**

- Identify the key technology and market trends impacting the rural telecommunications marketplace.
- Conduct pilot interviews
- Conduct detailed interviews with a representative sample of rural telephone carriers
- Assess the interview results to identify and estimate capital needs and their alignment with market and technology trends
- Provide recommendations on capital and technology needs of rural telephone carriers

## Key Activities

Tasks Completed:

- Developed analysis of key market and technology trends in the rural telecommunications marketplace
- Completed pilot interviews
- Developed the 'universe' list of rural telephone carriers sorted by geography, access lines, revenue etc.
- Developed a representative sample of rural telephone carriers for detailed interviews
- Interviewed 26 rural telephone carriers on current and future CAPEX needs.

## Status of Telecommunications Carriers in the US

## Status of Telecommunications Carriers in the US

- Never before in history has there been so much turmoil in the telecommunications industry in the US:
  - Bankruptcies of WorldCom and smaller carriers such as Williams, XO Communications and Genuity.
  - Financial uncertainties and shortfalls reported by RBOCs, namely Qwest.
  - Failure of many CLECs to achieve successful market entry and revenues.
- Other alarming financial trends contributing to telecom's turmoil include loss of access minutes due to mobile, reduction in access lines due to mobile and broadband proliferation and over all ARPU (average revenue per subscriber) decline.

**The financial issues facing the telecommunications industry today are resulting in decreased revenues and which ultimately results in decreased CAPEX and OPEX.**

## Wireless is Already Eating into Wireline Carrier Revenue



### "Cord-Cutting"

- 3% of mobile telephony subscribers rely on their wireless phones as their only phone
- 12% of those surveyed purchased a wireless phone instead of installing an additional wireline phone

### "Technology Substitution"

- BellSouth exiting the payphone business in part due to business lost to wireless phones
- 20 million mobile phone subscribers have free long distance – this number is increasing on a daily basis...

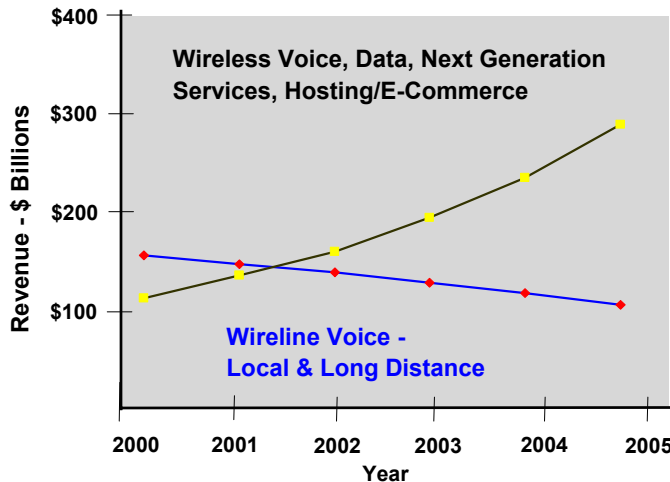
*(From FCC Report to Congress - June, 2001)*

**For the first time in history, the number of phone lines in the U. S. declined during the June quarter of 2002.**

- Verizon cited a 0.4% year-over-year decline in access lines
- SBC a 1.1% decline
- Qwest a 0.5% decline
- BellSouth an 0.8% decline

*Source: Various Analyst reports*

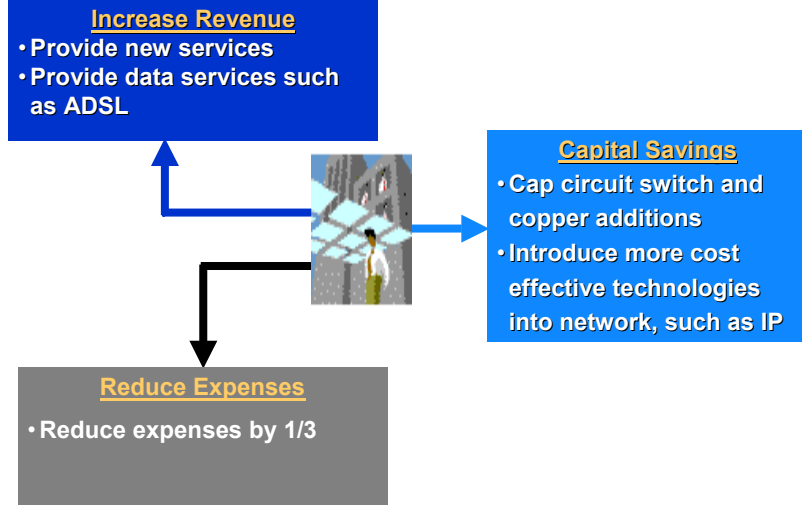
## Revenue Shifts in the Market To . . .



**Wireline Voice - Becoming smaller piece of U. S. Revenue Pie**

*\*Sources: Frost & Sullivan, PHB Hagler Bailly, Yankee Group, Forrester, Bear Sterns, IDC, Nielsen Research*

## What Does This Mean to a Carrier?



## Rural Telecommunications Carriers: Market Trends

## Rural Telecommunications Carriers Trends

- The financial issues facing the telecommunications industry and the larger carriers have a direct impact on rural carriers.
- As large carriers announce bankruptcy, the amount of money contributed to the Universal Service Fund is adversely impacted.
- Declining revenues in the fixed line long distance market due to price wars, mobile usage and IP (internet protocol) long distance is also affecting how much USF money is contributed.
- Many rural carriers who are dependent on USF funds are upset that other telecom ventures, such as mobile and CLEC operations, also get USF funds but have lower costs and lower investment in their operations.
  - Some RLEC executives report that the portability rules regarding USF funds could hurt long term investment, namely broadband.



## Rural Telecommunications Carriers Trends

- Many rural carriers are feeling the effects of the rise in mobile phone use– directly impacting their access minutes and access lines revenues.
- In order to deal with the loss in revenues, many are looking at additional services to add to the services portfolios, namely in the areas of broadband.
- High speed internet access, evolving to a converged communications model with one “pipe” providing voice, video and data is an area of interest to many RLECs.
  - Additional revenues from video services
  - Upgrading plant to provide next generation services and to somewhat “future proof” their plant
- Many RLECs see growth opportunities in becoming a CLEC in adjacent, underserved markets and find their CLEC operations being successful.



## Rural Telecommunications Carriers Trends

- Rural ILECs derive 33% operating margin from their local phone monopoly business, with overall margins of 16% for all services sold.  
(Source: Yankee Group, 2001)
- These types of financial results are quite healthy even though the economies of scale for telephone systems and lines are severely reduced by the geographic size of the serving area and the density of subscribers for rural telephone providers.
- Still, rural ILECs do suffer from less revenue as compared to non-rural providers because of smaller addressable business markets— where ILECs obtain a large amount of revenue and profit.
- Rural ILEC access lines are growing as RBOCs and large ILECS sell off rural service areas to independent carriers— expanding the geographic coverage and number of customers served by rural ILECs nationwide.

**Rural carriers have been relatively less immune to on going telecom woes due to their smaller scope of operations and less dependency on large business customers .**

## Rural Carrier CAPEX Needs

## Rural Telephone Company CAPEX Needs

- Rural communities, with their low population density, require more plant and special infrastructure to serve their customers.
  - Longer cables/loops
  - Digital loop carriers
  - Repeaters, load coils and line concentrators.
- According to a NECA survey, more than half of the switches used in rural communities are remote– to extend the VAS capability of the central office switch.
- NECA reports that of their subscriber pool, over 90% of all switches are digital and over 80% of all access lines are Signaling System 7 enabled.

**Loop costs and fiber cost for RLECs are much more than for suburban or urban areas due to the geographic expanse of the service area and low density of customers in that area.**

## Rural Telephone Carriers CAPEX Needs: Broadband

- The estimated cost to upgrade 35% remaining rural access lines to be broadband ready is over \$10B.
- The distance of the loop from the exchange provides the biggest impact on the cost of broadband loop upgrade.
- CDOSA refers to the access line being with in or outside of the Central Dial Office Serving Area

<b>Total Upgrade Cost:</b>	<b>\$10.9B</b>
<b>Estimated Cost Within CDOSA</b> 1,639,285@ \$493/line	<b>\$0.809B</b>
<b>Estimated cost outside CDOSA</b> 1,093,051@ \$4,121/line	<b>\$4.505B</b>
<b>Estimated cost of Isolated Territory</b> 600,957@ \$9,328/line	<b>\$5.606B</b>

Source: NECA, 2001

**The highest costs for broadband upgrades correspond with the smallest amount of lines– those lines in isolated territories.**

## Rural Telephony Providers: Needs and Challenges

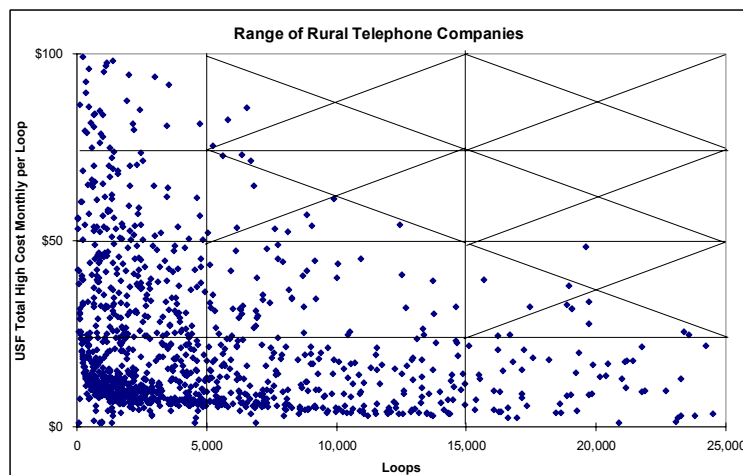
- Funding to help defray costs of broadband upgrades– which are far more expensive than for the average length due to the geography and community served.
- Funding for high speed access to tier 1 backbone nodes to backhaul broadband access– more than half of rural carriers are more than 70 miles away from a node and must lease expensive DS-3s to connect.
- Stronger efforts to retain public subsidies and USF to help balance the capital needs of rural ILECs.
- Additional and more flexible CAPEX funding avenues as revenues and profits decrease.

## CAPEX Assessment for Rural Carriers Survey Results

## Survey Overview

- 1313 Rural telephone companies were included in the survey frame
- These companies serve approximately 11 million access lines
- Detailed interview information was obtained for 26 of these companies
- The 26 companies were chosen as a systematic stratified sample to increase the variety of companies, home states, and special circumstances that would be covered
- The sample size is relatively small, but even with statistical variability, the results provide information suitable for the further planning efforts which will be taking place

## Stratified/Systematic Sampling



## Rural Telephone Company Business Activities

- The interviewed companies are engaged in a variety of lines of business
  - An estimated 33% of Rural Telephone companies are also cable or video providers (some via DSL)
  - An estimated 41% of Rural Telephone companies are ISPs, with an additional estimated 16% stating they are planning to enter this business soon
  - An estimated 10% of Rural Telephone companies are also cellular/mobile providers
- The interviewed companies view expansion into these related lines of business as insurance against the generally declining wireline and long distance revenue streams

## Interviews: Summary of Major Points

- Represents a diverse array of rural telephone companies
  - However, issues and responses were quite similar
- Rural carriers are diversifying lines of business to augment revenue to counter PSTN (public switched telephone network) revenue erosion and population out-migration.
- Main requirement for choosing a funding source
  - First: low interest rates
  - Next: easy to do business with
- Projects are funded using a mixture of equity and debt

## Survey Results: Rural Telephone Company Annual Capital Spending

- Based on current survey results, capital spending per year by Rural Telephone Companies is estimated to be **\$4.8 billion\***

- Major components of capital spending:

### DSL

Outside plant construction and upgrades

New switches and switch upgrades

Long-haul connections

Overbuilding neighboring ILEC territories

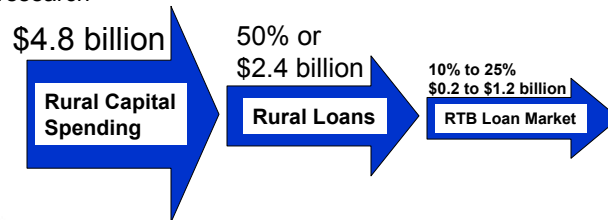
Cellular towers and other mobile infrastructure

## The RTB Addressable Market Under Today's Rules

- Some Rural Telephone Companies are not eligible to borrow from RTB under the current rules and regulations
  - Eliminating these companies from the market of all Rural Telephone Companies brings the \$4.8 billion dollar capital expenditure to **\$4.4 billion** dollars for currently-RTB-eligible companies
- RTB does not traditionally lend funds for overbuilding and cellular construction
  - Eliminating these categories that RTB today does not usually fund brings the total market, under RTB's rules today, to **\$3.4 billion** dollars

## RTB's Market Share: Initial view

- The \$4.8 billion dollar Rural Telephone Market does not all present itself to RTB for loans
  - Some fraction is funded internally via equity, equipment vendor financing and leasing. We estimate 50%, based on the few interviewees who discussed this
  - Some fraction is funded by RTB's competition. We estimate 10% to 25% based on a privatized RTB being a new entrant in this market, and assuming RTB becomes a competitive commercial bank
  - These initial assumptions must be tested with further market research



## Rural Carriers: Capital Expenditure Priorities

## Capital Spending for DSL

- **An estimated annual \$559 million (12%) is being spent per year for DSL**

- An estimated 56%\* of Rural Telephone companies offer DSL today, with an additional estimated 19% planning to provide DSL soon. \*Some RLECs may only offer DSL in one CO, percentage not indicative of entire serving area.
- An estimated 43% of Rural Telephone access lines are DSL capable today.
- Beyond high-speed internet access, some Rural Telephone Companies say they are looking to provide video via DSL
- Expenditures in this category include
  - Continued “DSL build-out” to increase the percent of lines which are DSL capable
  - DSLAMs, DLCs, and other DSL equipment
  - Video servers
- DSL capital expenditures are difficult to separate cleanly from general network reconditioning
  - DSL expenditures are actually larger than shown here because a portion of outside plant and switch upgrade expenditures are for DSL service

## Capital Spending for Outside Plant

- **An estimated annual \$1,640 million (34%) is being spent per year for outside plant construction and upgrades**

- Expenditures in this category include
  - Converting outside plant trunks to fiber
  - Fiber to the curb in some areas
  - Other outside plant upgrades
  - Providing outside plant to new home developments

**Capital spending on outside plant is very closely related to RLECs providing DSL service. The copper and fiber infrastructure in many cases was “outdated” and not robust enough to support broadband initiatives.**

## Capital Spending for Switches

- **An estimated \$1,177 million (24%) is being spent per year for new switches and switch upgrades**
- Expenditures in this category include
  - Replacing outdated switches
  - Adding STPs
  - Adding switching capacity
  - Adding DSL capabilities
  - Conforming to CALEA (Communications Assistance for Law Enforcement Act), LNP (local number portability), and number pooling
  - Soft switch trials

**Switch upgrades are also necessary for broadband initiatives, and many RLECs are looking to softswitches to augment or replace their circuit switches.**

## Capital Spending for Long Haul Connections

- **An estimated \$292 million (6%) is being spent per year for long-haul connections.**
  - These construction projects are typically one-time, but expensive investments
- Long haul fiber routes are built to connect various COs (central offices) of a multi-CO Rural Telephone Company
- Further, to provide Internet service, Rural Telephone Companies need access to the Internet backbone, available in large cities
  - Some Rural Telephone Companies lease lines from a neighboring RBOC or other large-capacity provider
  - Other Rural Telephone Companies build their own fiber networks to connect their own offices and also connect to an Internet POP

**Fiber links to more populous areas such as metro areas or tier 2 cities are necessary to connect rural areas voice, but more importantly, broadband networks to the rest of the world.**

## Rural Telephone Companies and “Overbuilding”

- Overbuilding is the situation where a second telephone provider (CLEC) builds a second telephone network in a community.
  - Usually the incumbent telephone company (in most cases, an RBOC) has older, outdated outside plant and service offerings
  - Usually the CLEC will build a fiber network and offer modern services to the community.
- An estimated 28-68% of Rural Telephone companies have overbuilt neighboring communities
  - The communities are carefully chosen by the CLEC to ensure eventual profitability
- An estimated 13% of Rural Telephone companies have plans to overbuild soon. For some it may not be a first overbuild.

**Overbuilds and CLEC ventures by RLECs have been very successful and many have turned out to be “self funding in terms of CAPEX and OPEX needed.**

## Capital Spending for Overbuilding

**An estimated \$664 million (14%) is being spent per year for overbuilding neighboring ILEC territories**

- Some neighboring community networks are purchased by the Rural Telephone Company, but typically it is less expensive to overbuild than to purchase and refurbish.
- Since outdated plant is typically replaced by fiber, the CLEC can offer a wide variety of modern services, including high-speed Internet access and video/CATV.
- By carefully choosing the communities to be overbuilt, the CLECs have found this activity to successful, generally increasing revenues.

**In many cases it is very expensive to overbuild because of the costs of the latest technologies and fiber needed to provide a competitive edge and broadband services to the overbuilt community.**

## Capital Spending for Mobile Services

- **Among the Companies in partnerships, an estimated \$499 million (10%) is being spent each year for cellular towers and other mobile infrastructure**
- In their diversification efforts, many rural phone companies have become partners in a mobile service consortium
  - An estimated 10% of Rural Telephone Companies participate in such partnerships
  - Other Rural Telephone Companies resell the cellular services of a large cellular provider, such as AT&T or Verizon

**Many of the top mobile companies in the US do not serve rural areas, therefore rural mobile ventures and partnerships are needed to develop, upgrade and maintain the mobile infrastructure in rural areas.**

## Conclusions

- In this assessment, Telcordia studied the current telecommunications environment, emphasizing the rural telephony market to understand and identify market dynamics affecting capital needs.
- Major cost areas for RLECs were identified and examined through a statistical sample of rural operating companies that were interviewed to assess major capital expenditures and needs.
- This assessment finds that the capital spending per year by Rural Telephone Companies is estimated to be \$4.8 billion.
- Significant areas of capital expenditure are closely or directly linked to upgrading network infrastructure to support broadband initiatives.

## Conclusions

- Rural telephone companies have intensive capital and operating expense needs to maintain their current infrastructure and upgrade to offer new revenue generating services.
- The decrease in PSTN (public switched telephone network) revenues due to loss in access lines and decreasing minutes of use (mainly due to the proliferation of mobile services) is eroding revenues and ultimately profits.
- To address the loss in revenues, RLECs are launching broadband services in order to introduce additional revenue generating services into their portfolio.
- However, the costs of augmenting infrastructure to be broadband capable is very CAPEX intensive

## Conclusions

- Other areas of concern for capital and operating cash flows for RLECs include the potential fluctuations in the USF pool and funding per carrier loop.
- USF changes are due to changing revenue trends and potential bankruptcies which may decrease the amount of the subsidy given to rural carriers— increasing the need for additional funding from alternative sources.
- RTB has played an important role in loaning money to RLECs for plant upgrades, DSL equipment, switch replacements and fiber builds— but only for RLEC operations.
- Survey respondents were favorable to RTB regarding lower interest rates and longer payback.
  - Many respondents indicated that the loan processing and reporting mechanisms and responsibilities were cumbersome.

## Conclusions

- Survey respondents have indicated the need for financing capital investments for cable/video, mobile and overbuild/CLEC ventures – areas that RTB/RUS currently support, with some limitations.
- RTB's competitors are providing more flexible financing support in the above mentioned areas – impacting RTB's position in the marketplace.
- Expanded specific loan initiatives for cable/video, mobile and overbuild would benefit not only the customers served in rural areas, but will also enhance RTB's financial potential.

## Additional Market Analysis Needed to Support RTB Privatization

- Expanded survey incorporating a larger sample with more detailed information on how and where CAPEX money is to be spent
- Market research to estimate rural carriers' response to a privatized RTB – to gauge the likelihood of RTB's market success and likelihood to do business with
- Develop business case and quantified value proposition for RTB to market its programs to mitigate competitive threats.
- Investigate specific revenue impacts on rural carriers from the ongoing telecom industry meltdown.

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